

REMARKS/ARGUMENTS

Claims 1-14 and 22-30 are pending in the application. Claims 1, 8, 22 and 28-30 are the independent claims.

I. INDICATION OF ALLOWABLE SUBJECT MATTER

Applicant thanks the Examiner for stating that Claims 4, 11 and 24 contain allowable subject matter and would be allowed if rewritten in independent form including all of the limitations of the base claim and intervening claims. As such, Applicant has added new Claims 28, 29 and 30, corresponding to Claims 4, 11 and 24, respectively. Based on the Examiner's prior comments, it is submitted that new Claims 28-30 are allowable.

II. REJECTION OF CLAIMS 2, 8, 9 AND 22 UNDER 35 U.S.C. §112

Claims 2, 8, 9 and 22 have been rejected under 35 U.S.C. §112, ¶2 because of insufficient antecedent basis for "the particular table" limitation in those claims. Those claims have been amended to more particularly point out and distinctly claim the invention. In view of these amendments, Applicant respectfully requests that the Examiner withdraw this rejection.

III. REJECTION OF CLAIMS 1-3, 5-6, 8-10, 12-13, 22-23 & 25-27 UNDER 35 U.S.C. §102(e)

On April 5, 2006, Applicant's attorney spoke with Examiner Truong on the telephone, where she indicated that she was withdrawing the rejection of Claims 1-3, 5-6, 8-10, 12-13, 22-23 and 25-27 under 35 U.S.C. §102(e). As such, Applicant will not address that rejection at this time. Should Applicant have misunderstood Examiner Truong (*i.e.*, the rejection under §102(e) is still outstanding), then Applicant requests that the Examiner please contact the Applicant immediately and Applicant will timely respond to that rejection.

IV. REJECTION OF CLAIMS 1, 8, AND 22 UNDER 35 U.S.C. §103

Independent Claims 1, 8 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,122,640 to Pereira ("Pereira") in view of U.S. Patent 6,192,365

to Draper (“*Draper*”). Applicant respectfully submits that the Office Action fails to make out a *prima facie* case of obviousness. Specifically, the Office Action (1) failed to cite references that teach or suggest all of the elements recited in the rejected claims; (2) failed to show or cite where in the prior art there is a suggestion or motivation to combine the references; and (3) failed to show or cite where in the prior art there exists a reasonable expectation of success to combine reference teachings.

Independent Claim 1, as amended, is similar to independent Claims 8 and 22, as amended, and reads as follows:

“A method for obtaining and maintaining storage information related to storage characteristics of a table in a database, comprising:

locking a particular table to be baselined;

baselining the table contained in the database, wherein storage information comprising the average row length of the rows in the table and the average free space in the table is obtained;

unlocking the table after it is baselined;

making an entry into a transaction log, wherein the entry contains the storage information;

retrieving the storage information from the transaction log; and

periodically updating the storage information by monitoring subsequent entries in the transaction log.”

Contrary to the features recited by independent Claim 1, *Pereira* and *Draper* do not teach, hint, or suggest baselining a database table to obtain information related to storage characteristics (*e.g.*, the average row length of the rows in the table and the average free space in the table) and then placing that storage information into a transaction log. Moreover, neither reference teaches retrieving storage information placed within the transaction log and then periodically updating the storage information by monitoring subsequent entries into the

transaction log. Because those two references – even in combination – fail to teach all of the claim limitations, the claims should be allowed.

A. U.S. Patent 6,122,640 to Pereira

Pereira teaches a method and apparatus for reorganizing a database management system (“DBMS”) table while the DBMS table remains available to users of the DBMS. *Col. 1, Ins. 7-11.* Database tables are comprised of blocks and each block may contain multiple rows. *Col. 1, Ins. 41-48.* During creation of the table, the DBMS system will allocate enough contiguous blocks to meet the anticipated size of the table. *Id.* However, over the course of time, the database table may grow larger than anticipated, and the DBMS will allocate additional blocks as required. *Col. 1, Ins. 59-63.* Such additional blocks are typically not contiguous to the blocks initially comprising the table. This situation, among others, causes the database to become fragmented and operate inefficiently. *Col. 2, Ins. 36-38.* When the database becomes fragmented, it is desirable to reorganize the table so that the table data can be retrieved more efficiently. *Col. 2, Ins. 48-52.* Historically, a reorganization required the database to be taken “off-line,” whereby the database was inaccessible to users. *Col. 3, Ins. 35-45.* Using the method or apparatus of *Pereira*, however, the database tables remain available for all intended purposes throughout the reorganization process. *Col. 3, Ins. 47-54.*

1. *Pereira* does not teach “baselining the table contained in the database, wherein storage information comprising the average row length of the rows in the table and the average free space in the table is obtained”

Applicant respectfully submits that *Pereira* does not teach or suggest baselining a table to obtain storage information comprising the average row length of the rows in the table and the average free space in the table is obtained. Column 5, lines 40-45 of *Pereira* state:

For example, in order to reorganize a database table, the structure of the database table must be known. A key element in the structure of an Oracle table is the

Oracle Row Address, also known as the “rowid.” A rowid consists of a file number, block number and slot number. This uniquely defines and can be used to locate an Oracle row.

When determining “the structure of a database table” for purposes of reorganizing a database table, however, it is not necessary to calculate statistical information like the average row length of the rows in the table or the average free space in the table. Rather, only information used to identify and locate a particular row, such as “file number, block number and slot number,” is needed.

Other portions of *Perira*, such as Table 5 and related text at column 10, lines 1-29, similarly do not teach or suggest baselining a table to obtain storage information comprising statistical information such as the average row length of the rows in the table and the average free space in the table.

TABLE 5

Description Lists used during the reorg process	
<u>Extent List Node in the List contains</u>	
FileNo	Oracle Data File Number
BlockNo	Starting Oracle Data Block
Length	No. of Blocks in this Extent
<u>Transaction Block List Node in the List contains</u>	
FileNo	Oracle Data File Number
BlockNo	Oracle Block Number
Count	No. of transactions for this block
<u>Transaction List Node in the List contains</u>	
rowid	Oracle Row Address
type	Transaction Type either I = insert U = update D=Delete
<u>Delete And Insert List Node in the List contains</u>	
SlotNo	Slot where row is stored in an Oracle block

As can be seen in the above table, *Pereira* teaches obtaining information for locating a particular block or row – like the Oracle data file number, the starting Oracle data block, the number of blocks in a particular extent, the number of transactions in a particular block, the Oracle row address, the transaction type and the slot where the row is stored in an Oracle block. Such

information is not equivalent to the average row length of the rows in the table or the average free space in the table.

2. Pereira does not teach “making an entry into a transaction log, wherein the entry contains the storage information”

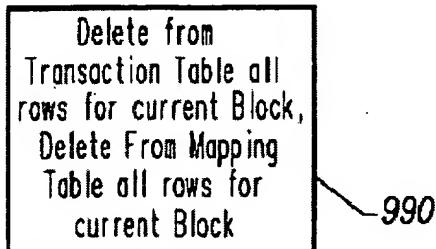
Applicant also respectfully submits that *Pereira* does not teach entering storage information comprising statistical information such as the average row length of the rows in the table and the average free space in the table into a transaction log. Although *Pereira* does teach using “a trigger on a source table to record transactions into a transaction log table” at column 4, lines 15-17, recording “transactions” into a transaction log is not the same as recording the “storage information” obtained as a result of baselining a database table. The trigger in *Pereira* enters information about a particular transaction, “for example, rowid, type of transaction [‘I’ for insert, ‘U’ for update and ‘D’ for delete], and current time stamp.” *Col. 6, Ins. 57-61*. That information is not storage information comprising statistical information such as the average row length of the rows in the table and the average free space in the table. Consequently, *Pereira* does not teach or suggest the step of “making an entry into a transaction log, wherein the entry contains the storage information,” as required by the independent claims.

3. Pereira does not teach “retrieving the storage information from the transaction log”

Pereira also does not teach the step of retrieving storage information from a transaction log. As previously discussed, *Pereira* does not teach either baselining a table to obtain storage information or entering storage information into a transaction log. Consequently, *Pereira* cannot teach retrieving non-existent storage information that was never placed into a transaction log.

This step is certainly not taught by *Pereira* at step 990 of Figure 9B. As can be seen from the figure below, deleting all the rows for a current block from a transaction log does not teach or

suggest retrieving storage information – deleting and retrieving are completely different operations and it is not necessary to retrieve information in order to delete that information.



Furthermore, step 990 of Figure 9B requires deleting from the transaction table “all the rows for a current block;” it does not teach or suggest selectively retrieving “storage information” from a transaction log, as required by the independent claims. Therefore, *Pereira* does not teach the step of “retrieving the storage information from the transaction log.”

4. *Pereira* does not teach the step of “periodically updating the storage information by monitoring subsequent entries in the transaction log”

The Examiner correctly noted that *Pereira* does not explicitly teach the step of “periodically updating the storage information by monitoring subsequent entries in the transaction log.” *Office Action of 2/28/06, p.8*. Hence, *Pereira* fails to teach each of the steps of the independent claims.

B. U.S. Patent 6,192,365 to Draper

Draper relates to, among other things, a method of using a transaction log to synchronize multiple versions of a database residing on different computers. In the context of the *Draper* reference, a transaction log is a chronological record of operations that occur on a database. For example, if an object were added to a database, the transaction log associated with that database would be modified and an entry would be made into the transaction log reflecting that an object was added to the underlying database. Essentially, *Draper* teaches comparing the transaction

logs for two different versions of a database for inconsistencies and, in the event of an inconsistency, taking measures to resolve those inconsistencies.

1. *Draper* does not teach “periodically updating the storage information by monitoring subsequent entries in the transaction log.”

As part of an “accessing step,” *Draper* teaches inserting an update history structure into a log database. *Col. 36, lns. 34-38.* “The update history structure may be implemented using an unreplicated attribute of each log database object, an update tracking object in the log database, or other means. The update history structure is indexed on the UOID [Unique Object Identifier] of the target database object it refers to and contains as an attribute the UOID of the most recent previous update of the target database object in the log database.” *Col. 36, lns. 39-45.*

It is unclear from the above passage whether “the update history structure for transactions shows that the [*Draper*] system monitors transaction in the transaction log” (as the Examiner asserts at page 8 of the outstanding Office Action). However, it is certain that *Draper* does not teach periodically updating the storage information after monitoring subsequent entries in the transaction log. *Draper* does not teach or suggest the concept of “storage information comprising the average row length of the rows in the table and the average free space in the table.” Rather, *Draper* teaches “a transaction log which represents a sequence of transactions in a network of connectable computers,” whereby “each completed transaction in the transaction log has a corresponding transaction sequence number.” *Col. 2, lns. 50-51; Col. 3, lns. 17-19.* Such “sequence of transactions” and “transaction sequence number” do not constitute storage information comprising the average row length of the rows in the table and the average free space in the table. As *Draper* does not teach or suggest storage information, *Draper* cannot

teach monitoring subsequent entries in a transaction log and periodically updating the storage information.

C. No Proper Suggestion or Motivation to Combine *Pereira* with *Draper*

As detailed above, both *Pereira* and *Draper*, whether alone or taken in combination, fail to teach or suggest all the elements recited by independent Claims 1, 8 and 22. Moreover, the Office Action failed to show or cite where in the prior art there is a proper suggestion or motivation to combine the references. Section 2143 of the MPEP requires that the teaching or suggestion to combine references must be found in the prior art, not in the Applicant's disclosure. Section 2143 also states that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. Finally, the MPEP notes that a statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teaching of the references. That is, the level of skill in the art cannot be relied upon to provide the suggestion to combine references.

The Office Action suggested that the motivation to combine *Pereira* with *Draper* would be "to improve the synchronization process or to maintain objects during making transactions in [a] transaction log." *Office Action of 2/28/06, p. 12*. For support, the Examiner apparently relies on an excerpt from *Draper*,¹ listed in pertinent part as follows:

It is well-known in the database arts to maintain a log of transactions. However, conventional disconnectable systems are not traditional database systems. Conventional disconnectable systems lack transaction logs which can be used to identify and then modify or remove certain apparently inconsistent operations to improve the synchronization process. Conventional systems provide no way to compress transaction logs based on the semantics of the logged update operations.

¹ The Office Action found the motivation to combine the references in "col. 2, lines 15-40." Applicant assumes that the Office Action refers to column 2, lines 15-40 of *Draper*.

Conventional systems also lack a way to use such transaction logs to recreate earlier versions of database objects.

Thus, it would be an advancement in the art to provide a system and method for compressing a log of transactions performed on disconnectable computers.

It would be a further advancement to provide such a system and method which are suited for use with systems and methods for transaction synchronization.

That excerpt from *Draper* teaches a number of points, including: (1) it is desirable to combine conventional disconnectable systems with transaction logs that can be used to identify and then modify or remove certain inconsistent operations to improve the synchronization process, (2) it is desirable to compress transaction logs based on the semantics of the logged update operations, and (3) it is desirable to use transaction logs to recreate earlier versions of database objects. However, *Draper* does not teach or suggest “maintaining objects while making transactions in [a] transaction log,” as the Examiner indicated. In addition, *Draper* does not teach or suggest that it would be obvious to combine (i) the method and apparatus for an online reorganization of a database management system table disclosed by *Pereira* with (ii) the method of using a transaction log to synchronize multiple versions of a database residing on different computers disclosed by *Draper*. There is no “synchronization process” in *Pereira* and thus a person of ordinary skill would not be motivated to combine *Pereira* with *Draper* in order to improve the non-existent synchronization process.

The present invention requires the combination of at least two separate skills – (a) inserting and retrieving storage information comprising statistical information such as the average row length of the rows in the table and the average free space in the table from a transaction log and (b) periodically updating the storage information by monitoring subsequent entries in the transaction log. The present invention combines those two skills in a manner that is

not suggested by *Pereira* or *Draper*. In sum, since neither *Pereira* nor *Draper* include a suggestion or motivation to make the claimed invention, the Office Action has failed to make out a *prima facie* case of obviousness. Therefore, Applicant respectfully requests that the rejection of independent Claims 1, 8 and 22 be withdrawn.

D. No Reasonable Expectation of Success if *Pereira* were combined with *Draper*

Finally, as required by § 2143 of the MPEP, the Office Action failed to show or cite where in *Pereira* and *Draper* there exists a reasonable expectation of success if the reference teachings are combined. As pointed out above, *Pereira* teaches a method and apparatus for an online reorganization of a database management system table while *Draper* teaches a method of using a transaction log to synchronize multiple versions of a database residing on different computers. In short, the *Pereira* and *Draper* inventions are designed to solve completely different problems; online reorganization is completely different than synchronizing multiple versions of a database. Even assuming that there was a motivation to combine *Pereira* and *Draper* (which there is not), the Examiner has not shown that a person of ordinary skill in the art would reasonably expect the combination to succeed – a requirement for a *prima facie* case of obviousness. Therefore, Applicant respectfully requests that the rejection of independent Claims 1, 8 and 22 be withdrawn.

V. REJECTION OF CLAIMS 2-3, 5-6, 9-10, 12-13, 23, AND 25-27 UNDER 35 U.S.C. §103

The Examiner has also rejected dependent Claims 2-3, 5-6, 9-10, 12-13, 23, and 25-27 under 35 U.S.C. 103(a) as being unpatentable over *Pereira* in view of *Draper*. However, for the same reasons as stated above with reference to the rejection of the independent claims, Applicant respectfully requests that the rejection of dependent Claims 2-3, 5-6, 9-10, 12-13, 23, and 25-27 be withdrawn. More specifically, neither *Pereira* nor *Draper*: (1) teach or suggest all the

limitations of the independent claims from which Claims 2-3, 5-6, 9-10, 12-13, 23, and 25-27 depend, (2) suggest a motivation to combine the references, or (3) demonstrate a reasonable expectation of success if the reference teachings are combined.

VI. REJECTION OF CLAIMS 7 AND 14 UNDER 35 U.S.C. §103

Dependent Claims 7 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable (i) over *Pereira* in view of U.S. Patent 5,870,758 to Bamford (“*Bamford*”) and (ii) over *Pereira* in view of *Draper* and further in view of *Bamford*. However, for the same reasons as stated above with reference to the rejection of the independent claims, Applicant respectfully requests that the rejection of dependent Claims 7 and 14 be withdrawn. More specifically, neither *Pereira*, *Draper* nor *Bamford*: (1) teach or suggest all the limitations of the independent claims from which Claims 7 & 14 depend, (2) suggest a motivation to combine the references, or (3) demonstrate a reasonable expectation of success if the reference teachings are combined. The Examiner did not cite *Bamford* as showing the claim limitations missing from either *Pereira* or the combination of *Pereira* and *Draper*.

CONCLUSION

Applicant believes this reply to be fully responsive to all outstanding issues and that the application, as amended by the foregoing claims, is in condition for allowance. Reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned attorney at 713-758-2002 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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